DOCUMENT RESUME

ED 071 401 EM 010 641

TITLE	A Glossary of Cable Terms.
INSTITUTION	Cable Television Information Center, Washington, D.C.
SPONS AGENCY	Ford Foundation, New York, N.Y.; John and Mary R. Markle Foundation, New York, N.Y.
PUB DATE	72
NOTE	14p.; See also EM 010 635-640, EM 010 642-643
AVAILABLE FROM	Cable Television Information Center, The Urban Institute, 2100 M Street, N. W., Washington, D. C. 20037 ($0.50)
EDRS PRICE	MF-$0.65 HC Not Available from EDRS.
DESCRIPTORS	*Cable Television; Community Antennas; *Glossaries

ABSTRACT

A glossary defines the technical and legal terms used in discussion of cable television in nontechnical language. (JK)

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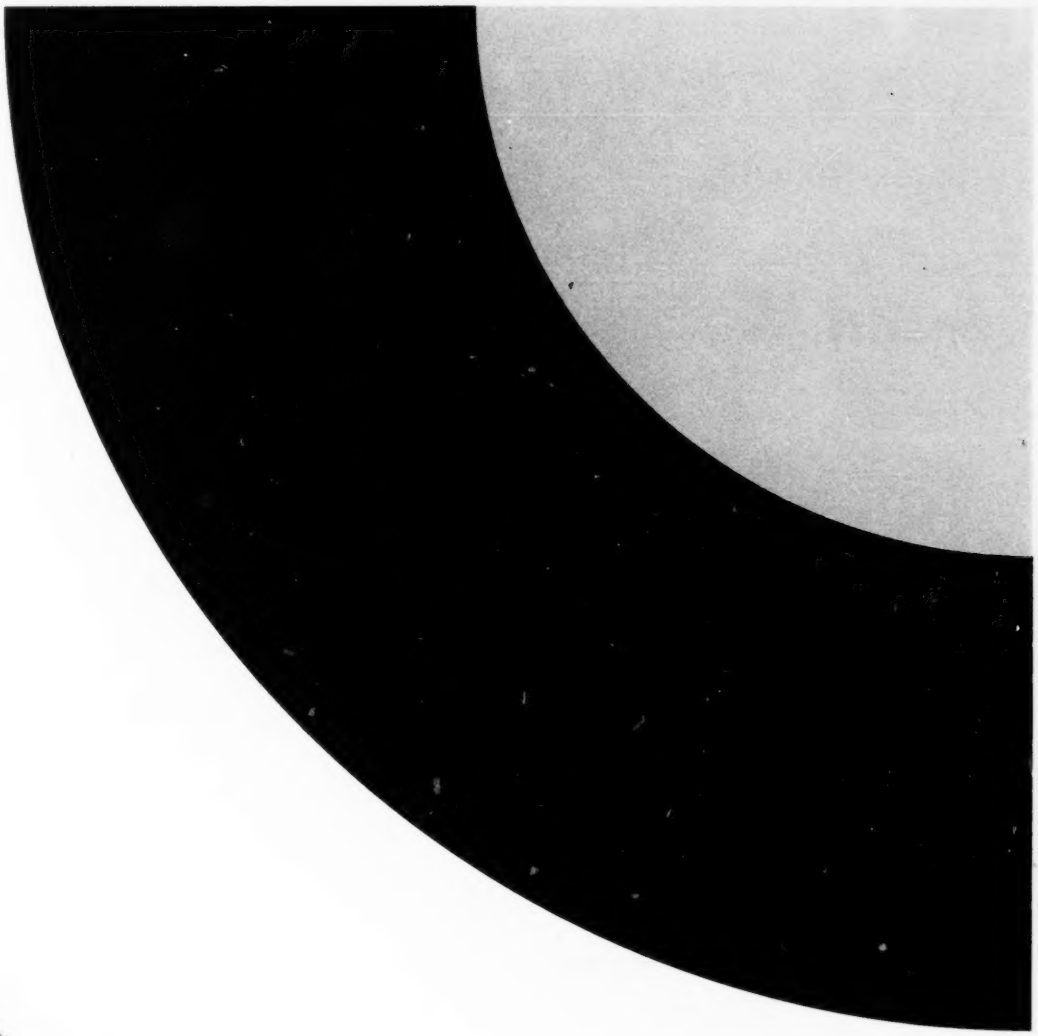
A Glossary of Cable Terms



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PREFACE

This document was prepared by the Cable Television Information Center under grants from the Ford Foundation and the John and Mary R. Markle Foundation to The Urban Institute.

The primary function of the center's publications program is to provide policy makers in local and state governments with the information and analytical tools required to arrive at optimum policies and procedures for the development of cable television in the public interest.

ACKNOWLEDGMENTS

The center is indebted to Delmer C. Ports., Vice President—Engineering, National Cable Television Association, and the Telecommunications Regulation Branch, Department of Communications, the Dominion, Canada.

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A GLOSSARY OF CABLE TERMS

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A Glossary of Cable Terms

Adjacent Channel Any of two TV channels are considered adjacent when their video carriers, either off-air or on a cable system, are 6 MHz apart. FM signals on a cable system, two channels apart are adjacent when their carriers are 400 to 600 KHz apart.

Allocations The assignments of frequencies by the FCC for various communications uses (e.g. television, radio, land-mobile, defense, microwave, etc.) to achieve a fair division of the available spectrum and to minimize interference among users.

Amplifier A device used to boost the strength of an electronic signal. Amplifiers are spaced at intervals throughout a cable system to rebuild the strength of television signals which weaken as they pass through the cable network.

Antenna A device used to transmit or receive broadcast signals.

Anti-siphoning FCC rules which prevent cable systems from "siphoning off" programming for pay cable channels that otherwise would be seen on conventional broadcast TV. "Anti-siphoning" rules state that only movies no older than three years and sports events not ordinarily seen on television can be cablecast.

Audio The aural components of a television signal; also, aural broadcasting such as AM and FM radio.

Bandwidth A measure of spectrum (frequency) use or capacity. For instance, a voice transmission by telephone requires a bandwidth of about 3000 cycles per second (3KHz). A TV channel occupies a bandwidth of 6 million cycles per second (6MHz). Cable system bandwidth occupies 50 to 300 MHz on the electromagnetic spectrum.

Broadband A general term used to describe wide bandwidth equipment or systems which can carry a large proportion of the electromagnetic spectrum. A broadband communications system can accommodate all broadcast and many other services.

Broadcaster's Service Area Geographical area encompassed by a station's signal. (See Predicted Grade A Contour and Predicted Grade B Contour).

Broadcasting Transmitting electromagnetic signals in a multidirectional pattern over the air.

Cable TV Previously called Community Antenna Television (CATV). A communications system which distributes broadcast programs and original programs and services by means of coaxial cable.

Cablecasting To originate programming over a cable system. Includes public access programming.

CARS (Community Antenna Relay Service)—The 12.75 - 12.95 GHz microwave frequency band which the FCC has assigned to the CATV industry for use in transporting television signals.

Carriage A cable system's procedure of carrying the signals of television stations on its various channels. FCC rules determine which signals cable systems must or may carry.

Cartridge Container for recorded programming designed to be shown on a television receiver. The cartridge contains a reel of motion picture film, videotape or electronically embossed vinyl tape, blank or recorded, and uses an external take-up reel.

Cassette A self-contained package of reel-to-reel blank or recorded film, videotape or electronically embossed vinyl tape which is continuous and self-rewinding. Similar to a cartridge, but of slightly different design.

Certificate of Compliance The approval of the FCC that must be obtained before a cable system can carry television broadcast signals.

Channel In television, a single path or section of the spectrum 6MHz wide, which carries a television signal.

Channel Capacity The maximum number of 6MHz channels which can be simultaneously carried on a CATV system.

Closed Circuit A system of transmitting TV signals in which the receiving and originating equipment are directly linked by cable, microwave or telephone lines, without broadcasting through the air.

Coaxial Cable Copper or copper-sheathed aluminum wire surrounded by an insulating layer of polyethylene foam, used by CATV systems. The insulating layer is covered with tubular shielding composed of tiny strands of braided copper wire, or a seamless aluminum sheath, and protective outer skin. The wire and the shielding react with each other to set up an electromagnetic field between them. This system reduces frequency loss and gives cable its great signal-carrying capacity.

Co-channel Any two or more TV signals are considered co-channel when their video carriers, either off-air or after conversion by CATV equipment, occupy the same TV channel.

Common Carrier Any point-to-point communications relay service available to the general public at non-discriminatory rates. The carrier can not control message content (e.g. telephone companies).

Compulsory License Legislation requiring copyright holders to license users of copyrighted material (CATV operators) on a uniform basis and for a stipulated fee.

Contrast The range of light and dark values in a picture, or the ratio between the maximum and minum brightness values. A high-contrast picture would contain intense blacks and whites; a lower-contrast picture would contain only shades of gray.

Converter A device used to convert non VHF television signals into standard VHF channels. Cable systems often install converters where more than 12 channels are relayed on a single cable. Converters also protect signals from the interference of strong local signals.

Cross Modulation A form of signal distortion in which modulation from one or more r-f carrier(s) is imposed on another carrier.

Cross Ownership Ownership of two or more kinds of communications outlets by the same individual or business. The FCC prohibits television stations and telephone companies from owning cable systems in their service areas. Television networks are prohibited from owning cable systems anywhere in the U.S.

Differential Gain In color TV, the change in gain, expressed in dB, for the 3.58 MHz color sub-carrier as the level of the luminance signal is varied from blanking to white.

Differential Phase Variation in phase of the color subcarrier of a TV signal as the level of the luminance signal is varied from blanking to white.

Distant Signal TV signals which originate at a point too far away to be picked up by ordinary home reception equipment; also signals defined by the FCC as outside a broadcaster's license area. Cable systems are limited by FCC rules in the number of distant signals they can offer subscribers.

Distribution Plant The hardware of a cable system—amplifiers, trunk cable and feeder lines, attached to utility poles or fed through underground conduits like telephone and electric wires.

Downstream Signals traveling from the headend to subscriber's homes.

Dual Cable A method of doubling channel capacity by using two cables installed side by side to carry different signals.

ETV (Educational Television Station)—A noncommercial television station primarily devoted to educational broadcasting.

Earth Stations Ground terminals that use antennas and associated electronic equipment to transmit, receive and process communications via satellite. Future cable systems may be able to interconnect by domestic communications satellites, creating regional and national cable networks.

Easement The right to use land for a specific purpose, such as laying cable.

Education Channel FCC rules require cable systems in the top 100 markets to set aside one channel for educational uses, to be available without cost for the "developmental period." The developmental period of a CATV system runs for five years from the time that subscriber service began, or five years after the completion of the basic trunk line.

Electromagnetic Spectrum A continuous range of frequencies of electromagnetic radiation (i.e. oscillating electrical and magnetic energy which can travel through space). Within the spectrum, waves have some specified common characteristics; the TV broadcast spectrum, for instance, ranges from 54 to 890 MHz. (see Frequency)

Exclusivity The provision in a commercial television film contract that grants exclusive playback rights for the film or episode to a broadcast station in the market it serves. Under the FCC's rules, cable operators cannot carry distant signals which would violate local television stations' exclusivity agreements.

Facsimile The electronic transmission of pictures, charts, graphs, etc., from one place to another by radio, telegraphy or telephone. With special facsimile equipment, a home television receiver may be able to deliver mail and newspapers by cable.

Feeder Line Intermediate cable distribution lines that connect the main trunk line to the smaller house drops that lead into residences.

Filter A circuit that selects the frequency of desired channels. Used in trunk and feeder lines for special cable services such as two-way operation.

Franchise Contractual agreement between a CATV operator and the governing municipal authority. Under federal regulation a franchise, certificate, contract or any other agreement amounts to a license to operate.

Frequency The number of times an electromagnetic signal repeats an identical cycle in a unit of time, usually one second. One Hertz (Hz) is one cycle per second. A KHz (Kilohertz) is one thousand cycles per second; a MHz (Megahertz) is one million cycles per second; a GHz (Gigahertz) is one billion cycles per second.

Full Network Station A commercial television broadcast station that generally carries 85 per cent of the hours of programming offered by one of the three major national networks during its weekly prime time hours.

Government Channel FCC rules require cable systems in the top 100 markets to set aside one channel for local government use, to be available without cost for the "developmental period." That period runs for five years from the time that subscriber service began, or until five years after the completion of the basic trunk line.

Grandfathering Exempting cable systems from the federal rules because 1) they were in existence or operation before the rules, or 2) substantial investments were made in system construction before the rules. Grandfathering applies to signal carriage, access channels and the certification process.

Hardware The equipment involved in production, storage, distribution or reception of electronic signals. In CATV it means the headend, the coaxial cable network, amplifiers, the television receiver and production equipment like cameras and videotape recorders.

Harmonic Distortion Form of interference involving the generation of harmonics according to the frequency relationship $f = nf_1$ for each frequency present, where n is a whole number equal to 2 or more.

Headend Electronic control center—generally located at the antenna site of a CATV system—usually including antennas, preamplifiers, frequency converters, demodulators, modulators and other related equipment which amplify, filter and convert incoming broadcast TV signals to cable system channels.

High VHF Band Part of the frequency band which the FCC allocates to VHF broadcasting, including channels 7 through 13, or 174 through 216 MHz.

House Drop The coaxial cable that connects each building or home to the nearest feeder line of the cable network.

Independent A TV station that has no exclusive affiliation which obliges it to carry programs from one of the national networks.

Interchangeability The ability to exchange tapes between different manufacturers' videotape recorders with no appreciable degradation of playback image.

Interconnect To link CATV headends, usually with microwave, so that subscribers to different cable systems can see the same programming simultaneously.

Interference Energy which tends to interfere with the reception of the desired signals, such as fading from airline flights, r-f inerference from adjacent channels, or "ghosting" from reflecting objects such as mountains and buildings.

Intermodulation Distortion Form of interference involving the generation of interfering beats between two or more carriers according to the frequency relationship $f = nf_1 \pm mf_2$, where n and m are whole numbers (but not zero), with appropriate expansion for additional carriers.

Kinescope Recording A film recording made by a motion picture camera designed to photograph a television program directly from the front of a television tube. Often called a "kine."

Leapfrogging CATV operators' practice of skipping over one or more of the nearest TV stations to bring in a farther signal for more program diversity on the cable. FCC rules establish priority for carrying stations that lie outside the cable system's service area.

Leaseback The practice by telephone companies of installing and maintaining CATV distribution systems, and "leasing" the facilities "back" to separate contractors for operation of the system.

Leased Channel In addition to the designated channels (education, government and public access) and over-the-air broadcast channels, cable systems must make the remainder of their channels available for lease. At least one channel is to be available for lease by part-time users. Channels can be leased by group or individuals for the sole use of the lessee at posted rates. The operator must not censor or control program content in any way, under FCC rules.

LDS (Local Distribution System)—A wide band microwave system or cable system which is capable of transporting a number of television signals simultaneously. Used to interconnect cable system headends.

Local Origination Channel A channel on a cable system (exclusive of broadcast signals) which is programmed by the cable operator and subject to his exclusive control.

Local Signals Television signals that are received at locations that are within the station's Predicted Grade B Contour. Cable systems must carry all commercial local signals in their areas.

Low VHF Band The part of the frequency band allocated by the FCC for VHF broadcast television, including television channels 2 through 6, or 54 through 108 MHz.

Microwave Line-of-sight, point-to-point transmission of signals at high frequency. Many CATV systems receive some television signals from a distant antenna location with the antenna and the system connected by microwave relay.

Mid Band The part of the frequency band that lies between television channels 6 and 7, reserved by the FCC for air, maritime and land mobile units, FM radio and aeronautical and maritime navigation. Mid band frequencies, 108 to 174 MHz, can also be used to provide additional channels on cable television systems.

Modulator The electronic equipment required to combine video and audio signals from a studio and convert them to radio frequencies (r-f) for distribution on a cable system. Also, a very low-powered television signal generator used to provide signals for distribution on a CATV system.

MSO (Multiple System Operator) A company which owns more than one CATV system.

N + 1 A formula which refers to the FCC requirements that provide for expansion of channel capacity for nonbroadcast use. If the governmental, educational, public access and leased channels are in use 80 per cent of the weekdays (Monday through Friday) for 80 per cent of the time during any three-hour period for six consecutive weeks, the system operator must expand the system's channel capacity within six months.

Net Weekly Circulation (NWC)—The estimated number of television households viewing a particular station at least once per week, Monday—Sunday, 6 am to 2 am, EST. Used to determine whether a station is "significantly viewed" in an area and must be carried by a cable system operating in that area.

Network Group of radio or television outlets linked by cable or microwave that transmit identical programs simultaneously, or the company that produces programs for them. The three national commercial television networks in the U.S. are the American Broadcasting Company, the Columbia Broadcasting Company and the National Broadcasting Company.

Off-the-air Reception of a TV signal that has been broadcast through the air.

OTP (Office of Telecommunications Policy)—Division of the Executive Office of the President staff that advises the Executive Branch on communications policy, studies policy questions and develops legislative proposals.

Ordinance A local law which governs the institution and operation of a cable television system in a community.

Overlapping Markets A case where a TV station's Predicted Grade B Contour is overlapped by the Predicted Grade B Contour of a television station located in a different market.

Pay TV A system of television in which scrambled signals are distributed and are unscrambled at the homeowner's set with a decoder that responds upon

payment of a fee for each program. Pay TV can also refer to a system where subscribers pay an extra fee for access to a special channel which might offer sports programs, first-run movies or professional training.

CATV Penetration The ratio of the number of subscribers to the total number of households passed by the cable system. Penetration is the basis of a system's profitability.

Performance Standards The minimum technical criteria that must be met by CATV systems, consistent with standards set by the FCC or the local ordinance.

Pole Attachment When CATV systems use existing pole lines maintained by power and telephone companies, an attachment contract must be negotiated between the parties of interest.

Predicted Grade A Contour The line representing the service area in which a good picture is computed to be available 90 per cent of the time at 70 per cent of the receiver locations. Signal contours determine what educational channels are carried on a cable system and, in smaller markets, what stations must be carried from other small markets.

Predicted Grade B Contour The concentric area marking a television station's service area in which a good picture is computed to be available 90 per cent of the time at 50 per cent of the receiver locations.

Program Nonduplication Under FCC rules, a cable system must black out the programming of a distant television station it carries, when the system would duplicate a local station's programming, on the request of the local station.

Public Access To insure that divergent community opinion is aired on cable television, FCC rules require systems in the top 100 markets to set aside one public access channel along with the education and government channels. The public access channel is free and available at all times on a first-come, first-served basis for noncommercial use by the general public.

Public Television Noncommercial television broadcasting.

Receiver Isolation The attenuation between any two receivers connected to the system.

Signal Level The rms voltage measured during the r-f signal peak. It is usually expressed in microvolts referred to an impedance of 75 ohms, or in dBmV, the value in decibels with respect to a reference level of O dBmV, which is 1 millivolt across 75 ohms.

Software Programming and programming materials such as films, videotapes and slides.

Special Effects Generator A device permitting combinations of images on a television screen supplied by one or more video inputs.

Splitter A passive device (one with no active electronic components) which distributes a television signal carried on a cable in two or more paths and sends it to a number of receivers simultaneously.

Sports Blackout Federal law requires cable systems and television stations to delete coverage of local sports events to protect gate receipts.

Sub Band The frequency band from 6 MHz to 54 MHz, which may be used for two-way data transmission.

Subscriber A person who pays a fee for cable services.

Super Band The frequency band from 216 to 600 MHz, used for fixed and mobile radios and additional television channels on a cable system.

SYNC Generator A device used to supply a common or master sync signal to a system of several cameras. This ensures that their scanning pulses will be in phase. Scanning pulses out of phase produce distortion or rolling, sometimes called "sync loss."

Switcher A control which permits the selection of one image from any of several cameras to be fed into the television display or recording system.

Switcher/Fader A device permitting gradual, overlapping transition from the image of one camera to another. Sometimes incorporated as part of a special effects generator.

Switched Service A cable communications service in which each subscriber has a terminal and may communicate with any other subscriber.

Synchronization Maintenance of simultaneous audio and video signals so that sound and picture operate in phase. Abbreviated "sync."

System Noise Refers to the random energy generated by thermal and shot effects in the system. It is specified in terms of its rms level as measured in a 4 MHz bandwidth centered within a 6 MHz cable television channel.

Tap A device installed in the feeder cable which connects the home TV set to the cable network. Also called a drop.

Tariff A schedule of services and rates filed by common carriers with regulatory bodies.

Television Households A television household is a household having one or more television sets. Estimates for each county are based on an updating of ARB (American Research Bureau) TV penetration estimates. The number of households that watch television in any locality during prime-time hours determines the top 100 markets for FCC cable rules.

Television Market A city or complex of closely associated cities served by commercial television broadcast signals from one or more TV stations located within the area. The FCC uses television markets for designating what kind of cable services an operator should provide in terms of signal carriage and nonbroadcast channel use.

TV Penetration The percentage of homes having one or more television sets at the time of the ARB American Research Bureau survey. The ARB surveys local markets from October through July; the number of surveys in a year depends on the size of the market.

Terminal The connectors, transformers and converter (if necessary) on the cable subscriber's set.

Top 100 Market Ranking of largest television broadcast areas by size of market, i.e. number of viewers and TV households. Used in FCC rulemakings and in selling of air time to advertisers.

Translator A type of relay system which picks up signals from distant or blocked-out television stations, converts the signals to another channel to avoid interference and retransmits them into areas the original signals could not have reached. Translators do not use cable to reach subscribers' homes and do not offer the other kinds of services that cable can provide (local origination, two-way operation, etc.)

Trunk Line The major distribution cable used in CATV. It divides into feeder lines which are tapped for service to subscribers.

Two-Way Capacity A CATV system with two-way capacity can conduct signals to the headend as well as away from it. Two-way or bi-directional systems now carry data; they may eventually carry full audio and video television signals in either direction.

Upstream Signals traveling from subscribers to the headend.

UHF Ultra High Frequencies, the range of frequencies extending from 300 to 3,000 MHz; also, television channels 14 through 83.

VHF Very High Frequencies, the range of frequencies extending from 30 to 300 MHz; also television channels 2 through 13.

Video The visual components of a television signal.

Videotape Used to electronically record sight and sound for instant playback. Videotape comes in half-inch, three-quarters, one and two-inch widths and can be erased and re-recorded.

Video Transmission The original video signal before it is modulated and converted to radio-frequency and broadcast or cablecast. A home television set reconverts radio-frequencies to a video signal.

VTR Abbreviation for videotape recorder, a device which allows the recording and playback of magnetic tape sound and picture recordings.

"Wired City" The concept of television and other communications, data, educational material, instructional television and information retrieval service that wired services can provide. Broadcast services must, of necessity, be limited by scarce spectrum space; wired services have theoretically unlimited channel capacity. (Discussed in the article "A proposal for Wired City Television" by Harold J. Barnett and Edward Greenberg in the Fall 1967, issue of the *Washington University Law Quarterly*).